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NRO REVIEW COMPLETED

9127-68
Copy 1 of 4

2 July 1968

MEMORANDUM FOR: Director of Operations, OSA
ATTENTION : Special Action Staff, OSA
SUBJECT : Quarterly Program Progress Report
Deputy for Research and Development
(April, May, June 1968)

Attached is the Deputy for Research and Development,
OSA Quarterly Program Progress Report for the quarter ending
30 June 1968.

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Deputy for
Research and Development
Special Activities

Attachment:
Quarterly Program
Progress Report

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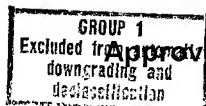
A(P)D/R&D/OSA/ 2 July 68
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QUARTERLY PROGRAM PROGRESS REPORT

Deputy for Research and Development

April, May, June 1968

I. OX CART

A. Development Summary

1. Sensors - During the period from 1 April 1968 to 28 May 1968 (date of last camera configuration flight) a total of 19 photographic missions were flown.

a. Type I - Fifteen (15) camera flights were accomplished. One (1) was an operational mission, [] It was successful as were the fourteen (14) non-operational missions.

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b. Type IV - Four (4) missions, all non-operational, were completed and were successful.

c. Other accomplishments during the reporting period were:

(1) Type I altitude calibration tests were completed.

(2) The second phase of the low sun angle tests relating to Type I exposures were completed.

(3) Validation flights for Type I(H) were completed. Contractor analysis of data indicated it would have been considered operationally ready.

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(5) TYPE IV (SN-3) had two good validation flights. Contractor analysis of material indicates this configuration would have been declared operationally ready.

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[] 9127-68
Page 3II. IDEALISTA. U-2R Development Summary

1. Airframe - A U-2R flight manual meeting was held at Edwards AFB at which representatives of LAC, Customer one, Customer two, and the Detachments were in attendance. Various format proposals for the Flight Manual performance charts were reviewed. LAC was tasked to prepare suggested sample charts based on the various inputs of the attendees. These charts were received in Headquarters on 25 June 1968 and will be reviewed prior to the next reporting period.
2. A U-2R technical meeting was held at LAC, Burbank, to review (a) the progress of the development flight test program, (b) the status of various problems, (c) the production aircraft delivery status, and (d) the proposed follow-on program. A detailed report [] has been written summarizing the significant results of this meeting.
3. Propulsion - The unaxisymmetric thrust and noise problems encountered with the ejector type tailpipe on the U-2R have now been resolved. The final fix to the problem involved use of a 13½" cylindrical extension to the previous Bill of Material tailpipe. A set of free floating segmented annular bypass doors at the engine face were also utilized. These doors close to prevent the engine compressor from drawing air away from the ejector on the ground when the nacelle pressure is higher than that at the engine face. The doors then open in flight when the engine face pressure is higher than nacelle pressure to provide cooling airflow to the nacelle and secondary 25X1D airflow to the ejector.
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5. A problem involving engine oil pressure fluctuations on some U-2R engine installations has developed. Tests are continuing on the Number One Article with a so-called constant rise oil pump which eliminates the feature on the variable rise Bill of Material pump which adjusts the discharge pressure of the oil boost pump to maintain a constant inlet pressure to the main oil pump. This change requires a careful manual adjustment of the boost pump discharge pressure on the ground which may create problems in use of this system in the field. Pratt & Whitney Engineering is analyzing the problem to determine if the problem can be eliminated on the Bill of Material pump by changes to the designs of pressure regulating valves, or by perhaps incorporating features of the constant rise pump in the Bill of Material pump.

6. Life Support

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- a. Training - Two new IDEALIST pilots, [] received partial pressure suit indoctrinations from [] during this period, utilizing the one-man altitude chamber at Detachment G.

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- b. S-1010 PPA - Three project pilots received S-1010 PPA fittings and altitude chamber indoctrinations from [] during this period. The fittings and chamber runs were successful with pilot acceptance continuing to be favorable. [] also participated in S-1010 flotation tests during this period, in anticipation of the parasail training program. Also, preliminary S-1010 investigations were conducted in attempting to clarify the U-2R air conditioning problem.

7. Payload

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- a. Functional checks and flight tests were conducted with the B, Delta III, [] systems in the U-2R vehicles during this reporting period. While no major problems were encountered that would require vehicle or configuration rework, some adjustments have yet to be made in

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mounting provisions and temperature control to afford peak performance from the sensor systems. Functional checks and flight tests of the H configuration, A-1 and A-2 systems will be accomplished during July. Normal training and flight verification is continuing with sensors in the U-2C.

- b. A contract was let for the procurement of thirteen optical bar cameras and associated ground support equipment during this reporting period.

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Delivery of the first camera is expected 1 December 1968 and the last camera in September 1969.

III. GENERAL R&D

A. Drag Reduction Program

Some promising results have been achieved in the wind tunnel test program now underway at the U. S. Navy Post-Graduate School wind tunnel at Monterey, California. As a consequence, the effort has been accelerated with specific emphasis on drag reduction of the U-2R wing.

B.

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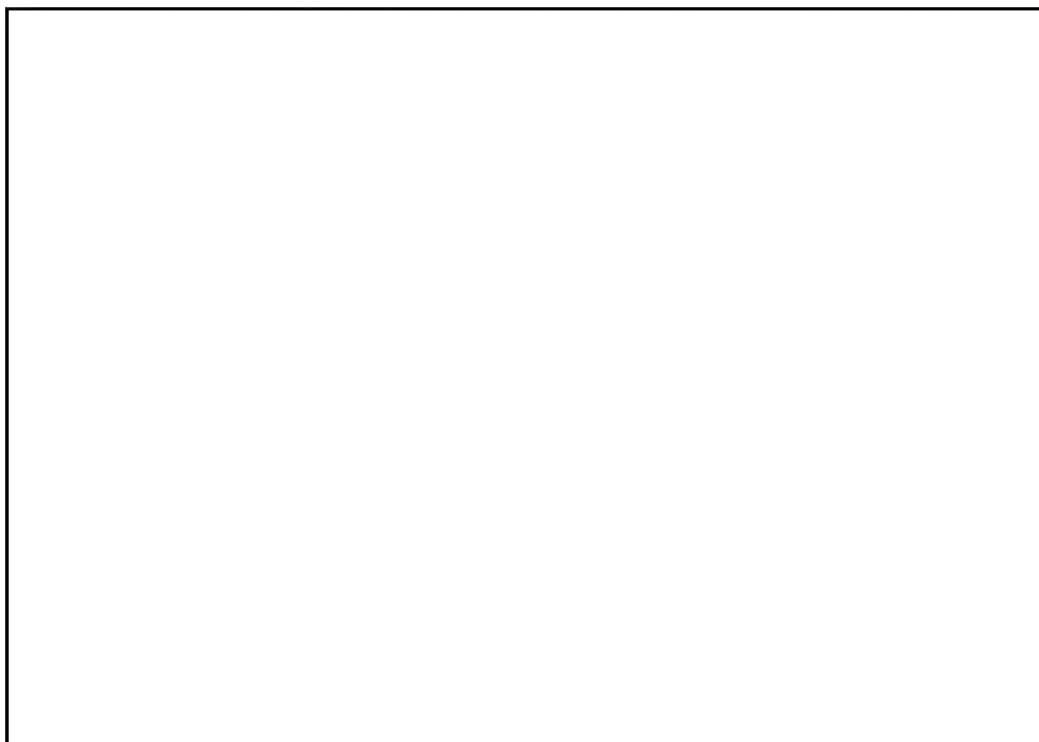
C. Propulsion

1. High Altitude Engine Relight Program

Late in FY 1968 the High Altitude Engine Relight Program funding was approved by DNRO. This program involves a flight demonstration program of a system for improving the altitude relight envelope of the J75-P-13B engine in the U-2R aircraft through use of oxygen injection. Proposals have been received from Pratt and Whitney for engine hardware and test stand validation of the complete engine relight system. New or modified hardware includes an oxygen injection system, modified burner cans and an adjustable minimum fuel flow setting on the fuel control. A proposal has been received from Lockheed for the modification of one aircraft and flight test demonstration of the system.

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D. Haze Attenuation Study

A preliminary report of flight test results shows some evidence of contrast improvement using the polarizing filter with black and white photography. However, the improvement is less apparent than had been expected. There is evidence that a significant improvement may be expected with color photography. Accordingly, color tests will be performed using a higher acuity lens to determine the degree of improvement that may be expected.

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IV. MISCELLANEOUS

A.

B.

C. Life Support

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[] attended the annual scientific meetings of the Aerospace Medical Association during this period.

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